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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/665,564	Applicant(s) DEGENARO ET AL.	
	Examiner FARHAN M. SYED	Art Unit 2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-37 are pending. The Examiner acknowledges amended claims 27 and 32.

Response to Remarks/Argument

2. Applicant's arguments, see page 13, filed 11 September 2008, with respect to claims 14-26 have been fully considered and are persuasive. The 35 U.S.C. 112, 6th paragraph, rejection of a Non-Final Office action, mailed 11 June 2008 has been withdrawn.

3. Applicant's argument, see pages 13-14, filed 11 September 2008, with respect to claim 32 have been fully considered and are persuasive. The Examiner notes that Applicant amended claim 32 to recite "A tangible computer-readable storage medium…" The term computer-readable storage medium appears to establish a concrete and tangible result, since the Applicant's disclosure describes the use of ROM, EPROM, RAM that stores machine-readable instructions. Therefore, the 35 U.S.C. 101 rejection of a non-final office action, mailed 11 June 2008, has been withdrawn.

4. Applicant's arguments filed 11 September 2008 have been fully considered but they are not persuasive for the reasons set forth below.

Applicant argues:

(1) The prior art of record does not teach a virtual resource independent of an actual resource.

The Examiner disagrees. The combination of Funderburk and Loaiza teach a virtual resource independent of an actual resource. According to the Applicant's specification, see paragraph [0073] of US 2005/0065937, that states "**Virtual Resources may contain <u>any</u>** or all of the following information, including one virtual name, **one actual name**, one collection descriptor, one image (icon), one or more domains, zero or more attributes, zero or more methods, zero or more validators, one resource implementor, one description, and one last modified date and time." If the Virtual Resource contains an actual name, then wouldn't the virtual resource be an actual resource? Therefore, a default XML view as described in Funderburk may be at least one virtual resource. Thus, the combination of Funderburk and Loaiza teaches constructing at least one virtual resource independent of an actual resource (i.e. *"Figure 2 illustrates the default view for a simple purchase-order database. The database consists of three tables, one to track customer orders, a second to track items associated with an order, and a third to track the payments due for each order. Items and payments are related to orders by an order identifier (oid). In the default XML view, top-level elements correspond to tables, with table names appearing as tags. Row elements are nested under these. Within a row element, column names appear as tags and column values appear as text. Although not shown, an XML schema associated with the default view captures primary- and foreign-key relationships."* The preceding text clearly indicates that at least one virtual resource is the default XML view.)(Page 620). The Examiner suggests further claim language clarification to better understand the scope of the aforementioned limitation and to help further prosecution.

Hence, the Applicant's arguments do not distinguish over the claimed invention over the prior art of record.

Claim Rejections - 35 USC § 103

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1-37 are rejected under 35 U.S.C. 102(a) as being anticipated by a non-patent literature entitled "XTABLES: Bridging relational technology and XML" by J.E. Funderburk, G. Kiernan, J. Shanmugasundaram, E. Shekita, and C. Wei, pages 616-641 (known hereinafter as Funderburk)(previously presented) in view of Loaiza et al., (U.S. Patent 6,618,822 B1 and known hereinafter as Loaiza)(previously presented).

As per claims 1, 14, 31, and 32, Funderburk teaches a method of claim 1 (Abstract), a system of claim 14 (Abstract), a method of claim 31 (Abstract), and a computer-readable medium of claim 32 (Figure 5) of developing actual resources without alteration into a collection of virtual resources customized to a particular audience, said method comprising (i.e. *"One of the features provided by XTABLES is the ability to create XML views of existing relational data." "Users can then create application-specific XML views on top of the default XML view."* The preceding text clearly indicates that a collection of virtual resources is a specific XML view and existing relational data is the actual resource.)(Page 616, paragraph 2): constructing at least one

virtual resource independent of an actual resource (i.e. *"Figure 2 illustrates the default view for a simple purchase-order database. The database consists of three tables, one to track customer orders, a second to track items associated with an order, and a third to track the payments due for each order. Items and payments are related to orders by an order identifier (oid). In the default XML view, top-level elements correspond to tables, with table names appearing as tags. Row elements are nested under these. Within a row element, column names appear as tags and column values appear as text. Although not shown, an XML schema associated with the default view captures primary- and foreign-key relationships."* The preceding text clearly indicates that at least one virtual resource is the default XML view.)(Page 620); connecting the actual resource to the at least one virtual resource (i.e. *"Figure 2 illustrates the default view for a simple purchase-order database. The database consists of three tables, one to track customer orders, a second to track items associated with an order, and a third to track the payments due for each order. Items and payments are related to orders by an order identifier (oid). In the default XML view, top-level elements correspond to tables, with table names appearing as tags. Row elements are nested under these. Within a row element, column names appear as tags and column values appear as text. Although not shown, an XML schema associated with the default view captures primary- and foreign-key relationships."* The preceding text clearly indicates that connecting is corresponding, at least one actual resource is the database consisting of three tables, and virtual resource is the default XML view.)(Page 620); retrieving the at least one virtual resource (i.e. *"Figure 2 illustrates the default view for a simple purchase-order database. The database consists of three tables, one to track customer orders, a second to track items associated with an order, and a third to track the payments due for each order. Items and payments are related to orders by an order identifier (oid). In the default XML view, top-level elements correspond to tables, with table names appearing as tags. Row elements are nested under these. Within a row element, column names appear as tags and column values appear as text. Although not shown, an XML schema associated with the default view captures primary- and foreign-key relationships."* The preceding text clearly indicates that retrieving is displaying the default XML view)(Page 620); and extracting at least one descriptor from said at

least one retrieved virtual resource (i.e. *"Figure 2 illustrates the default view for a simple purchase-order database. The database consists of three tables, one to track customer orders, a second to track items associated with an order, and a third to track the payments due for each order. Items and payments are related to orders by an order identifier (oid). In the default XML view, top-level elements correspond to tables, with table names appearing as tags. Row elements are nested under these. Within a row element, column names appear as tags and column values appear as text. Although not shown, an XML schema associated with the default view captures primary- and foreign-key relationships."* The preceding text clearly indicates that at least one descriptor is a tag.) (Page 620).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create a view of data in the recovery logs**. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, where the applicant defines a resource as *"**resource might be a database table**, a Java.RTM. Bean, an Enterprise Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc."* Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claims 2 and 15, Funderburk teaches a method of claim 2 (Abstract), a system of claim 15 (Abstract) wherein said connecting comprises directly mapping the at least one actual resource to the at least one virtual resource (i.e. *"XTABLES does this by automatically mapping the schema and data of the underlying relational database system to a low-level default XML view."* The preceding text clearly indicates that at least one actual resource is the underlying relational database system.)(Page 616).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create a view of data in the recovery logs**. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, the applicant defines a resource as *"**resource might be a database table**, a Java.RTM. Bean, an Enterprise Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc."* Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claims 3 and 16, Funderburk teaches a method of claim 3 (Abstract), a system of claim 16 (Abstract) wherein the constructing comprises at least one of: renaming a method; hiding a method; composing a method; renaming an attribute;

hiding an attribute; composing an attribute; assigning to at least one domain; designating as a collection; assigning to at least one validator; assigning a description; designating as at least one of ready and not ready; and assigning a last modified date and time (i.e. *"A query is initially parsed and converted from XQuery to an intermediate query representation called the XML Query Graph Model (XQGM). The query is then composed with the XML views it references, and rewrite optimizations are performed to eliminate the construction of intermediate XML fragments, unroll recursion, and push down predicates."* The preceding text clearly indicates that renaming a method, hiding a method, etc. is example of XML fragments)(Page 622).

As per claims 4, 8, 17 and 21, Funderburk teaches a method of claim 4 and 8 (Abstract), a system of claim 17 and 21 (Abstract), wherein said at least one virtual resource comprises a plurality of virtual resources and said virtual resources are connected to each other through a relationship carrying semantic that can be leveraged by a consumer of resources, said method further comprising (i.e. *"Users can then create application-specific XML views on top of the default XML view. These application-specific views are created using XQuery, a general-purpose, declarative XML query language currently being standardized by the W3C (World Wide Web Consortium)."* The preceding text clearly indicates that a relationship carrying semantic is the creation of application-specific XML views on top of the default XML view, where XML views are virtual resources and consumer of resources are users.)(Page 616): constructing at least one virtual relationship between at least two virtual resources (i.e. *"Continuing the example, suppose that a user wants to publish the purchase-order database as a list of orders in the XML format shown in Figure 3. There, each order appears as a top-level element, with its associated items and payments (ordered by due date) nested under it. To transform the default view into the desired XML format, a user-defined view called "orders" is created, as shown in Figure 4. The view definition is fairly*

straightforward. An XQuery FLWR (for, let, where, return) expression (lines 2–22) is used to construct each order element. The "for" clause on line 2 causes the variable $order to be bound to each "row" element of the order table. The XPath expression appearing in line 2 describes how to extract each "row" element from the order table: start at the root of the default view, navigate to each "order" element nested under it, and then navigate to each "row" element nested under those "order" elements. The constructor for each new "order" element is given in lines 4–22. For a given order, nested FLWR expressions are used to construct its list of associated items (lines 6–13) and payments (lines 14–21). The predicate on line 8 ($order/id_$item/oid) is used to join an order with its items. Similarly, the predicate on line 16 ($order/id _ $payment/oid) is used to join an order with its payments." The preceding text clearly indicates that at least one virtual relationship is orders and the two virtual resources are the default XML view and the user-defined view.)(Page 620-621); coupling at least one actual relationship implementor to at least one virtual relationship (i.e. Per the preceding text, the orders, which is a virtual relationship is based on one of the three tables, where an actual relationship is the customer order.)(Page 620); performing at least one retrieval of a virtual relationship (i.e. *"An XQuery FLWR (for, let, where, return) expression (lines 2–22) is used to construct each order element."* The preceding text illustrates a retrieval of orders from the purchase-order database to the user-defined XML view 'Order.')(Page 620); and extracting at least one descriptor from at least one retrieved virtual relationship (i.e. Per the preceding text, the XML tags, which are descriptors, are embedded in an XML view.)(Page 620).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create a view of data in the recovery logs**. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, where the applicant defines a resource as *"**resource might be a database table**, a Java.RTM. Bean, an Enterprise*

Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc." Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claims 5, 9, 18, and 22, Funderburk teaches a method of claim 5 and 9 (Abstract), a system of claim 18 and 22 (Abstract) wherein said coupling comprises: directly mapping said at least one actual relationship implementor to said at least one virtual relationship (i.e. *"As shown, each edge is uniquely identified by the identifier fields of the source and destination nodes (the sid and did fields). Each edge also contains the name, value, and type information about its destination node. The order among sibling subelements is captured using the ordinal field. In our example, the edge pointing to the root XML element ("PurchaseOrder") is mapped to the first row. Its sid field is 0, which represents the identifier of the document root. The edges pointing to the BuyerName and Date attributes of the "PurchaseOrder" element are mapped to the second and third row, respectively. Note that these are related to the purchase order using the sid field. Similarly, the "ItemsBought" and "Payments" subelements of a "PurchaseOrder" element are represented by the fourth and fifth row, respectively. The ordinal field captures their relative order. The other edges of the document are stored similarly."* The preceding text clearly indicates that the virtual relationship is the purchase order and the actual relationship implementor is the first row of a table.)(Page 636).

As per claims 6, 10 19, and 23, Funderburk teaches a method of claim 6 and 10 (Abstract), a system of claim 19 and 23 (Abstract) wherein the relationship constructing comprises at least one of: assigning a root virtual resource name; assigning a target virtual resource name; assigning a relationship name; assigning a relationship type; assigning a description; assigning a target instance naming scheme; designating as at least one of ready and not ready; and assigning a last modified date and time (i.e. *"As shown, each edge is uniquely identified by the identifier fields of the source and destination nodes (the sid and did fields). Each edge also contains the name, value, and type information about its destination node. The order among sibling subelements is captured using the ordinal field. In our example, the edge pointing to the root XML element ("PurchaseOrder") is mapped to the first row. Its sid field is 0, which represents the identifier of the document root. The edges pointing to the BuyerName and Date attributes of the "PurchaseOrder" element are mapped to the second and third row, respectively. Note that these are related to the purchase order using the sid field. Similarly, the "ItemsBought" and "Payments" subelements of a "PurchaseOrder" element are represented by the fourth and fifth row, respectively. The ordinal field captures their relative order. The other edges of the document are stored similarly."* The preceding text clearly indicates that the 'PurchaseOrder' is assigning a relationship name between a virtual resource, which is the XML view, and the actual resource, which is a table within a relational database.)(Page 636).

As per claims 7, 12, 20 and 25, Funderburk teaches a method of claim 7 and 12 (Abstract), a system of claim 20 and 25 (Abstract) wherein the retrieving comprises locating virtual relationships by at least one of: a domain; a name; a root; a type; and a target (i.e. *"As shown, each edge is uniquely identified by the identifier fields of the source and destination nodes (the sid and did fields). Each edge also contains the name, value, and type information about its destination node. The order among sibling subelements is captured using the ordinal field. In our*

example, the edge pointing to the root XML element ("PurchaseOrder") is mapped to the first row. Its sid field is 0, which represents the identifier of the document root. The edges pointing to the BuyerName and Date attributes of the "PurchaseOrder" element are mapped to the second and third row, respectively. Note that these are related to the purchase order using the sid field. Similarly, the "ItemsBought" and "Payments" subelements of a "PurchaseOrder" element are represented by the fourth and fifth row, respectively. The ordinal field captures their relative order. The other edges of the document are stored similarly." The preceding text clearly indicates that the 'PurchaseOrder' is an example of a name.)(Page 636).

As per claims 11 and 24, Funderburk teaches a method of claim 11 (Abstract), a system of claim 24 (Abstract) wherein the retrieving comprises locating virtual resources by at least one of (i.e. *"Continuing the example, suppose that a user wants to publish the purchase-order database as a list of orders in the XML format shown in Figure 3." The preceding text clearly indicates that retrieving is publishing.)(Page 620): a domain; a name; and a relationship. (i.e. "To transform the default view into the desired XML format, a user-defined view called "orders" is created, as shown in Figure 4."* The preceding text clearly indicates that a user-defined view, which is an example of a virtual resource, called "orders" is, which is an example of name.)(Page 620).

As per claims 13 and 26, Funderburk teaches a method of claim 13 (Abstract), a system of claim 26 (Abstract), wherein descriptor validator information is employed to limit actual resource usage (i.e. *"Another feature provided by XTABLES is the ability to query XML views of relational data. This is important because users often need only a subset of a view's data. Moreover, users often need to synthesize and extract data from multiple views. In XTABLES, queries are specified using XQuery, the same language used to specify XML views. XTABLES executes queries efficiently by performing XML view composition so that only the desired relational data items are materialized."* The

preceding text clearly indicates that a descriptor validator information is an XML tag that is used to generate XML views based on the relational data to synthesize and extract data from multiple views, thus limiting the actual resource, which is the relational data, usage.) (Pages 616-617).

As per claim 27, Funderburk teaches a system comprised of a plurality of actual resources, a service to manage descriptions of said actual resources, said service comprising: defining at least one virtual domain to satisfy a user-requirements analysis (i.e. *"Users can query XML documents using the same query language that they use to create and query XML views of relational data. In addition, users can issue queries that span XML documents and XML views of relational data. As a result, users are provided with unified access to both relational data and XML documents, without having to deal with separate databases."* The preceding text clearly indicates that a requirement analysis is a query and a virtual domain is an XML document.)(Page 617); and defining at least one virtual resource describing as least one actual resource within the at least one virtual domain to satisfy the user-requirements analysis (i.e. *"Continuing the example, suppose that a user wants to publish the purchase-order database as a list of orders in the XML format shown in Figure 3. There, each order appears as a top-level element, with its associated items and payments (ordered by due date) nested under it. To transform the default view into the desired XML format, a user-defined view called "orders" is created, as shown in Figure 4."* The preceding text clearly indicates that at least one virtual resource is the XML view of orders and one actual resource is the purchase-order database.)(Page 620).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create** a **view of data in the recovery logs**. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, where the applicant defines a resource as *"**resource might be** a **database table**, a Java.RTM. Bean, an Enterprise*

Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc." Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claim 28, Funderburk teaches a system further comprising: analyzing a requirement for actual resource usage, to provide said user requirements analysis (i.e. *"The XTABLES default XML view captures both relational data and meta-data (schema) information. This allows users to write queries (and create views) that treat relational data and meta-data interchangeably."* The preceding text clearly indicates that the actual resource usage is the relational data and the requirement analysis is the query.) (Page 618).

As per claim 29, Funderburk teaches a system further comprising: defining at least one virtual relationship between at least two virtual resources (i.e. *"To transform the default view into the desired XML format, a user-defined view called "orders" is created, as shown in Figure 4. "* The preceding text clearly indicates that at least one virtual relationship, which is 'orders' exists between two virtual resources, which are the default XML view and the "orders" XML view.)(Page 620).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create a view of data in the recovery logs**.*

The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources." In the Applicant's specification, see page 3, lines 1-3, where the applicant defines a resource as *"**resource might be a database table**, a Java.RTM. Bean, an Enterprise Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc."* Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claim 30, Funderburk teaches a system wherein at least one of a virtual resource and a virtual relationship is utilized to create an application program (i.e. *"Once the 'orders' view has been created, queries can be issued against it."* The preceding text clearly indicates that an application program, which is the 'orders' view has been created, since queries can be issued against it, that is a set of instruction codes used to perform some tangible result.)(Page 621).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create a view of data in the recovery logs**. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, where the applicant defines a resource as *"**resource might be a database table**, a Java.RTM. Bean, an Enterprise Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible*

Markup Language (XML) file, etc." Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claim 33, Funderburk teaches a method of developing actual resources without alteration into a collection of virtual resources customized to a particular audience, said method comprising (i.e. *"As a starting point, XTABLES automatically creates the default XML view, which is a low-level XML view of the underlying relational database "* The preceding text clearly indicates that refactoring actual resources without alteration into a collection of virtual resource is the creation of a default XML view, where the XML view is the virtual resource and the database table is the actual resource.)(Page 620): constructing at least one virtual resource independent of an actual resource; and providing in the at least one virtual resource a structured meta-data layer which contains semantic information for leveraging by a consumer of the virtual resources (i.e. *"Users can then create application-specific XML views on top of the default XML view."* The preceding text clearly indicates that a structured a consumer, which is the user, can leverage, which is create application-specific XML views, from the virtual resource, which is the default XML view.)(Page 616).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create* ***"virtual tables" that create a view of data in the recovery logs****. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, where the applicant defines a resource as *"****resource might be a database table****, a Java.RTM. Bean, an Enterprise Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc."* Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

As per claim 34, Funderburk teaches a method wherein said semantic information includes relationships with agreed upon semantics including any of "related-to," "contains," and "is-conflicting-with," between entities (i.e. *"The table and view operators in XQGM are used to refer to relational tables and XML view definitions, respectively. The unnnest operator is used to unnest XML lists. The function operator us used to invoke Xquery-valued functions represented in XQGM can be found in Reference 7."*)(Page 623).

As per claim 35, Funderburk teaches a method wherein said semantic information allows any of making new resources manipulation operations available to

logic authoring tools and services as an input to a conflict detection tool (i.e. *"XTABLES allows users to treat XML document views like XML views of relational data because, internally, XML documents are nothing by XML views of relational data. Whenever a user creates an XML document view, XTABLES uses one of possibly many relational schema generators to automatically create relational tables for storing XML documents. XML documents 'stored' in this view are then shredded and stored as rows in these tables. In addition, XTABLE generates a reconstruction XML view over the created relational tables, which (virtually) reconstructs the 'stored' XML documents from the shredded rows. A reconstruction XML view is specified just like any other XML view of relational data – by using a query over the default XML view of the created tables."*)(Page 631).

As per claim 36 and 37, Funderburk teaches a method further comprising: creating at least one virtual resource instance (i.e. "As a starting point, XTABLES automatically creates the default XML view, which is a low-level XML view of the underlying relational database." The preceding text clearly indicates that at least one virtual resource instance is created, which is the default XML view.)(Page 620); assigning an identity to the at least one virtual resource instance (i.e. *"To transform the default view into the desired XML format, a user-defined view called 'orders' is created, as shown in Figure 4."* The preceding text clearly indicates that an identity, 'orders' is assigned to the virtual resource instance, which is the user-defined XML view.)(Page 620); and associating the at least one virtual resource instance with one virtual resource (i.e. The term 'order' is assigned to the XML view.)(Page 620).

However Funderburk does not explicitly teach virtual resource.

Loaiza teaches virtual resource (i.e. *"Alternatively, user-defined functions are registered with the database system to create **"virtual tables" that create a view of data in the recovery logs**. The user-defined functions dynamically retrieve and populate column values for a virtual table from underlying data sources."* In the Applicant's specification, see page 3, lines 1-3, where the applicant

defines a resource as *"**resource might be a database table**, a Java.RTM. Bean, an Enterprise Java.RTM. Bean (EJB), a Java.RTM. object, a legacy application, a Web Service, a flat file, an eXtensible Markup Language (XML) file, etc."* Therefore, the Examiner interprets virtual tables as virtual resource.)(Column 5, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Funderburk with the teachings of Loaiza to include virtual resource with the motivation to allow users to query seamlessly over relational data and meta-data and allow users to write queries that span XML documents and XML views of relational data (Funderburk, Abstract).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Farhan M. Syed whose telephone number is 571-272-7191. The examiner can normally be reached on 8:30AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christian Chace can be reached on 571-272-4190. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/F. M. S./
Examiner, Art Unit 2165

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